

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action**

Facility Name: International Paper Company – Maintenance Area
Facility Address: 10 International Way, Longview, Washington
Facility EPA ID #: WAD 010745917

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

 X If yes, check here and continue with #2 below.

 If no, reevaluate existing data, or

 If data are not available, skip to #6 and enter “IN” (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental indicators (EIs) are measures being used by the RCRA corrective action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of “Current Human Exposures Under Control” EI

A positive “Current Human Exposures Under Control” EI determination (“YE” status code) indicates that there are no “unacceptable” human exposures to “contamination” (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all “contamination” subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While final remedies remain the long-term objective of the RCRA corrective action program the EI are near-term objectives which are currently being used as program measures for the Government Performance and Results Act of 1993, GPRA). The “Current Human Exposures Under Control” EI are for reasonably expected human exposures under current land- and groundwater-use conditions only, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA corrective action program’s overall mission to protect human health and the environment requires that final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration/Applicability of EI Determinations

EI determinations status codes should remain in RCRAInfo national database only as long as they remain

true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “contaminated”¹ above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA corrective action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale/Key Contaminants</u>
Groundwater	X			See below
Air (indoor) ²		X		
Surface Soil (e.g., <2 feet)			X	
Surface Water		X		
Sediment		X		
Subsurface Soil (e.g., >2 feet)	X			See below
Air (outdoor)		X		

_____ If no (for all media), skip to #6, and enter “YE,” status code after providing or citing appropriate “levels,” and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded.

___X___ If yes (for any media), continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media), skip to #6 and enter “IN” status code.

Rationale and Reference(s): The former International Paper facility was located on the north side of the Columbia River, less than two miles downstream of the confluence of the Columbia and Cowlitz rivers. The former facility lies within the 100-year floodplain but is protected by control levees. The Port of Longview has purchased the former facility through a number of property transactions, the last being in 1998.

International Paper operated the former treated wood product (TWP) area from 1956 to 1983. Process water from the wood treatment activities was routed to two recovery ponds (Ponds 1 and 2). The TWP area, the site of the former wood treatment facility at the former southwestern corner of the International Paper facility, encompassed the retort building, associated structures (e.g., tanks, sheds, water treatment facilities, and the locations of former Ponds 1 and 2. Use of

¹ “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

² Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggests that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

the recovery ponds was discontinued in 1983. Soil from the recovery ponds was excavated and disposed of in a permitted treatment, storage, and disposal facility in 1985. The former recovery ponds and adjacent areas were backfilled with clean soil and capped with an engineered cover in 1989.

Soil sampling and groundwater monitoring detected dissolved and/or free phase wood-treating constituent above MTCA cleanup levels. The constituents of concern (COCs) in soil and groundwater include pentachlorophenol, polycyclic hydrocarbons (PAHs), and total petroleum hydrocarbons (TPH). In a consent decree filed August 18, 1997, all contiguous areas associated with the TWP area, including several SWMUs, were determined to constitute one dangerous waste management unit. As part of a cleanup action, a low permeability soil-bentonite barrier wall was constructed around the TWP area in 1997. A low-permeability engineered cover was placed over the containment area to minimize surface water infiltration and to minimize potential contact with impacted soil in 1998. A bioventing/biosparging system and LNAPL recovery system were installed in the containment area. Imposition of a deed restriction has been delayed until the nature and extent of contamination outside of the containment system is determined.

Three areas of concern were identified during construction of the subsurface barrier wall in the fall of 1997. An investigation was performed near the former TWP area in July 1998 to assess soil conditions in the three identified areas. The results of that investigation indicated that soils in the area immediately to the west and northwest of the barrier wall had detectable PAH and TPH compounds. The impacted soils were found the area between the former TWP area and the Port of Longview's maintenance facility. Groundwater samples from monitoring wells in this area contained TPH as diesel, pentachlorophenol, and PAH compounds. A lineament observed on historical aerial photographs ran northwest through the maintenance facility area and is believed to have carried process water from wood treatment activities from the former TWP area to ponds nearby.

Further investigation of the area along the north and west boundaries of the TWP area was postponed until an investigation of areas that historically may have ponded process water. Those areas of historical impoundments were investigated in January 1999.

An investigation of the area to the north and west of the former TWP area was conducted in July 1999. Constituents of concern that exceeded MTCA residential soil cleanup levels included TPH as diesel, PAH compounds, and pentachlorophenol. Concentrations of total carcinogenic PAH compounds exceeded MTCA industrial soil cleanup levels in three locations. Concentrations of TPH as diesel exceeded MTCA residential groundwater cleanup levels in four borings. Additional sampling was completed in February 2000.

The area in the vicinity of the Port of Longview's maintenance facility is now a storage area for delivery and storage of pipe, covered with three feet of gravel fill and topped with asphalt. The immediate area around the maintenance facility is also paved with asphalt.

In the spring of 2003, a biosparging/bioventing system was installed in the maintenance facility area. The system consists of one horizontal biosparging well and four vertical bioventing wells in the intermittent perched aquifer above the Upper Silt. Three horizontal biosparging wells and five groundwater monitoring/venting wells are screened within Aquifer A below the Upper Silt. The biosparging/bioventing began operation in June 2002. Due to perched groundwater above the Upper Silt, the bioventing wells have been used as additional biosparging wells since system start up. The groundwater monitoring/venting wells allow monitoring of the groundwater

cleanup progress and periodic venting of Aquifer A during biosparging operations.

Concentrations of constituents of concern in the maintenance facility area have dropped below cleanup levels with the exception of well AV-10, a groundwater monitoring/venting well screened in Aquifer A. Analytical results from monitoring in March 2003 were the highest observed to date in well AV-10. Although decreasing trends in constituents of concern has not yet been observed in well AV-10, hydrocarbon degrading bacteria concentrations have increased by two orders of magnitude, suggesting rates of hydrocarbon biodegradation have also increased. Active sparging has been observed in well AV-10 during quarterly monitoring events in the form of wellhead pressure and groundwater bubbling.

DNAPL has been observed and been recovered from biosparging well BV-13, screened in the perched aquifer above the Upper Silt.

References:

- *Cleanup Action Plan, Former Treated Wood Products Area, International Paper Facility, Longview, Washington*; July 1997
- *Performance and Compliance Monitoring Plan, Former Treated Wood Products Area, International Paper Facility, Longview, Washington*; July 1997
- Letter from Howard Steeley (Department of Ecology) to RueAnn Thomas (International Paper), November 7, 1997; request for work plan to investigate visually-impacted soils encountered during construction of subsurface barrier wall
- *Investigation of Areas of Soil Impact Outside the Containment Area*; December 17, 1998
- *Offsite Investigation Work Plan, International Paper, Longview, Washington*; December 21, 1998
- *Additional Perimeter Boring Investigation Work Plan, International Paper, Longview, Washington*; July 16, 1999
- *Draft Additional Perimeter Boring Investigation Report and Maintenance Facility Work Plan, International Paper, Longview, Washington*; February 4, 2000
- *Draft Report, Soil and Groundwater Investigation of Eastern Area, International Paper, Longview, Washington*; February 7, 2000
- *Draft Report, Soil and Groundwater Investigation of Western Area, International Paper, Longview, Washington*; February 21, 2000
- Letter from RueAnn Thomas (International Paper) to Kaia Petersen (Department of Ecology); April 19, 2000; submittal of results from investigation near Port of Longview's maintenance facility in February 2000
- *As-Built Report/Operation and Maintenance Manual, Biosparging/Bioventing Area, Maintenance Facility Area, Former International Paper Facility, Longview, Washington*; March 2003
- *Annual Operation and Maintenance Report, Former International Paper Facility, Longview, Washington*; July 2003

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table
Potential **Human Receptors** (Under Current Conditions)

"Contaminated"	Residents	Workers	Day-	Construction	Trespassers	Recreation	Food
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" Media			Care				³
Groundwater	No	No	No	Yes	-----	-----	No
Air (indoors)	No	No	No	-----	-----	-----	-----
Soil (surface, e.g., <2 ft)	No	No	No	No	No	No	No
Surface Water	No	No	-----	-----	No	No	No
Sediment	No	No	-----	-----	No	No	No
Soil (subsurface e.g., >2 ft)	-----	-----	-----	Yes	-----	-----	No
Air (outdoors)	No	No	No	No	No	-----	-----

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.
2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) have dashed spaces ("----"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- _____ If no (pathways are not complete for any contaminated media-receptor combination), skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- __X__ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination), continue after providing supporting explanation.
- _____ If unknown (for any "Contaminated" Media - Human Receptor combination), skip to #6 and enter "IN" status code

Rationale and Reference(s):

Residences: There are no residential areas at the facility, immediately adjacent to the facility, or above the contaminated groundwater.

Workers: Workers at the maintenance facility are not exposed groundwater or to contaminated subsurface soils that have not been covered or from areas where the cover has been removed for site remediation.

Day care: There are no known day care businesses at the facility or nearby.

Construction: Construction and remediation activities may expose at the facility or nearby may expose workers to contaminants in groundwater and subsurface soils.

Trespassers: Entrance to the facility is controlled by the Port of Longview. While there is a chance that trespassers may gain access to the facility, this institutional control satisfactorily interrupts this pathway.

³ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

Recreation: There are no recreational activities at the facility. Recreational use of the nearby waterways is present, but a tidal study performed in the nearby former TWP area in 1995 and 1996 indicated that shallow groundwater flow is towards the north-northeast, away from the Columbia River.

Food: There are no subsistence and other fishing or food collection activities at the facility. There may be some subsistence and other fishing or food collection activities in and along nearby waterways, but a tidal study performed in the nearby former TWP area in 1995 and 1996 indicated that shallow groundwater flow is towards the north-northeast away from the Columbia River.

- 4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**⁴ (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

 X If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

 If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

 If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s): There are no ongoing construction or remediation activities occurring the vicinity of the maintenance facility. Any construction or remedial activities will be conducted under a site safety plan to avoid exposure to contaminated subsurface soils and groundwater. This area will include under a deed restriction for the subsurface barrier wall constructed in the former TWP area. Activities that will be prohibited under the deed restriction include subsurface intrusion such as drilling, excavation, and grading activities, and construction of structures that require subsurface foundations.

- 5 Can the “significant” **exposures** (identified in #4) be shown to be within **acceptable** limits?

 If yes (all “significant” exposures have been shown to be within acceptable limits), continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

⁴ If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health risk assessment specialist with appropriate education, training and experience.

_____ If no (there are current exposures that can be reasonably expected to be “unacceptable”), continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.

_____ If unknown (for any potentially “unacceptable” exposure), continue and enter “IN” status code.

Rationale and Reference(s): _____

6. Check the appropriate RCRAInfo status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

 X YE - Yes, “Current Human Exposures Under Control” has been verified. Based on a review of the information contained in this EI Determination, “Current Human Exposures” are expected to be “Under Control” for the Maintenance Facility Area at the International Paper facility, EPA ID No. WAD 010745917, located at 10 International Way, Longview, Washington under current and reasonably expected conditions. This determination will be reevaluated when the Agency/State becomes aware of significant changes at the facility.

_____ NO - “Current Human Exposures” are NOT “Under Control.”

_____ IN - More information is needed to make a determination.

Completed by _____/s/_____ Date 8/03
Kaia Petersen
Hydrogeologist

Supervisor _____/s/_____ Date 8/03
K Seiler, Supervisor
Hazardous Waste and Toxics Reduction, Southwest Regional Office
Department of Ecology

Locations where references may be found:

Department of Ecology, Southwest Regional Office, Central Files
P.O. Box 47775, Olympia, Washington 98504-7775, or
300 Desmond Drive, Lacey, Washington 98503

Contact telephone and e-mail numbers

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kpet461@ecy.wa.gov

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action**

Facility Name: International Paper Company – Maintenance Area
Facility Address: 10 International Way, Longview, Washington
Facility EPA ID #: WAD 010745917

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA corrective action (e.g., from solid waste management units (SWMUs), regulated units (RUs), and areas of concern (AOCs)), been considered in this EI determination?

 X If yes, check here and continue with #2 below.

 If no, reevaluate existing data, or

 If data are not available, skip to #8 and enter “IN” (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental indicators (EI) are measures being used by the RCRA corrective action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of “Migration of Contaminated Groundwater Under Control” EI

A positive “Migration of Contaminated Groundwater Under Control” EI determination (“YE” status code) indicates that the migration of “contaminated” groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original “area of contaminated groundwater” (for all groundwater “contamination” subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While final remedies remain the long-term objective of the RCRA corrective action program, EIs are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The “Migration of Contaminated Groundwater Under Control” EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI determinations status codes should remain in RCRAInfo national database only as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is groundwater known or reasonably suspected to be “contaminated”¹ above appropriately protective “levels” (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA corrective action, anywhere at, or from, the facility?

 X If yes, continue after identifying key contaminants, citing appropriate “levels,” and referencing supporting documentation.

 If no, skip to #8 and enter “YE” status code, after citing appropriate “levels,” and referencing supporting documentation to demonstrate that groundwater is not “contaminated.”

 If unknown, skip to #8 and enter “IN” status code.

Rationale and Reference(s): The former International Paper facility is located on the north side of the Columbia River, less than two miles downstream of the confluence of the Columbia and Cowlitz rivers. The former facility lies within the 100-year floodplain but is protected by control levees. The Port of Longview has purchased the former facility through a number of property transactions, the last being in 1998.

International Paper operated the former treated wood product (TWP) area from 1956 to 1983. Process water from the wood treatment activities was routed to two recovery ponds (Ponds 1 and 2). The TWP area, the site of the former wood treatment facility at the former southwestern corner of the International Paper facility, encompassed the retort building, associated structures (e.g., tanks, sheds, water treatment facilities, and the locations of former Ponds 1 and 2). Use of the recovery ponds was discontinued in 1983. Soil from the recovery ponds was excavated and disposed of in a permitted treatment, storage, and disposal facility in 1985. The former recovery ponds and adjacent areas were backfilled with clean soil and capped with an engineered cover in 1989.

Soil sampling and groundwater monitoring detected dissolved and/or free phase wood-treating constituents above MTCA cleanup levels. The constituents of concern (COCs) in soil and groundwater include pentachlorophenol, polynuclear aromatic hydrocarbons (PAHs), and total petroleum hydrocarbons (TPH). In a consent decree filed August 18, 1997, all contiguous areas associated with the TWP area, including several solid waste management units (SWMUs), were determined to constitute one dangerous waste management unit. As part of a cleanup action, a low permeability soil-bentonite barrier wall was constructed around the TWP area in 1997. A low-permeability engineered cover was placed over the containment area to minimize surface

¹ “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate “levels” (appropriate for the protection of the groundwater resource and its beneficial uses).

water infiltration and to minimize potential contact with impacted soil in 1998. A bioventing/biosparging system and LNAPL recovery system were installed in the containment area. Imposition of a deed restriction has been delayed until the nature and extent of contamination outside of the containment system is determined.

Three areas of concern were identified during construction of the subsurface barrier wall in the fall of 1997. These three areas were identified in a letter dated November 7, 1997, from the Department of Ecology to International Paper. The three areas included: the area along the west side of the barrier wall (Area 1), the southwest corner of the barrier wall near the location where a 24-inch diameter fire control line was encountered (Area 2), and the area along the south line of the barrier wall near the location of well PW-3 (Area 3)

An investigation was performed near the former TWP area in July 1998 to assess soil conditions in the three identified areas. The results of that investigation indicated that soils in Area 1 immediately to the west and northwest of the barrier wall had detectable PAH and TPH compounds. Sheen was observed above the Upper Silt in borings PB-01, PB-02, PB-04, PB-11, and PB-12. Groundwater samples from monitoring wells in this area contained TPH as diesel, pentachlorophenol, and PAH compounds. The impacted soils were found the area between the former TWP area and the Port of Longview's maintenance facility, localized within approximately 25 feet of an historical lineament. The lineament observed on historical aerial photographs ran northwest through the maintenance facility area and is believed to have carried process water from wood treatment activities from the former TWP area to ponds nearby.

Subsequent investigations generally defined the extent of contamination in Maintenance Facility Area (MFA). Areas that historically may have impounded process water were investigated in January 1999. An investigation of the area to the north and west of the former TWP area was conducted in July 1999. Constituents of concern that exceeded MTCA residential soil cleanup levels included TPH as diesel, PAH compounds, and pentachlorophenol. Concentrations of total carcinogenic PAH compounds exceeded MTCA industrial soil cleanup levels in three locations. Concentrations of TPH as diesel exceeded MTCA residential groundwater cleanup levels in four borings. Additional soil sampling was completed in February 2000.

The area in the vicinity of the Port of Longview's maintenance facility is now a storage area for delivery and storage of pipe, covered with three feet of gravel fill and topped with asphalt. The immediate area around the maintenance facility is also paved with asphalt.

In the spring of 2002, a biosparging/bioventing system was installed in the maintenance facility area. The system consists of one horizontal bioventing well (BV-16) and four vertical bioventing wells (BV-12 through BV-15) screened above the Upper Silt. Three horizontal biosparging wells (AS-09 through AS-11) and five groundwater monitoring/venting wells (AV-09 through AV-13) are screened within Aquifer A below the Upper Silt. The biosparging/bioventing began operation in June 2002. Due to a rise in groundwater levels above the Upper Silt above historical norms, the four vertical bioventing wells were replumbed to allow operation as a second biosparging system since system start up. The five groundwater monitoring/venting wells allow monitoring of the groundwater cleanup progress and periodic venting of Aquifer A during biosparging operations.

Concentrations of constituents of concern in the maintenance facility area have dropped below cleanup levels with the exception of well AV-10, a groundwater monitoring/venting well screened in Aquifer A. Decreasing trends in constituents of concern has been observed in well

AV-10; hydrocarbon degrading bacteria concentrations remain elevated, suggesting rates of hydrocarbon biodegradation have also increased. Well AV-10 is monitored on a monthly basis and, when observed, NAPL has been removed when technically feasible. Amounts detected in well AV-10 are often too low to be recoverable; approximately 0.8 gallons of DNAPL were recovered from AV-10 in 2004.

DNAPL has been observed and been recovered from biosparging well BV-13, screened above the Upper Silt. The **2004 Annual Remedial Operations and Groundwater Monitoring Report**, dated December 2004, indicates DNAPL continues to be detected in well BV-13; approximately 1.5 gallons of DNAPL were recovered from BV-13 in 2004. International Paper will continue to gauge well BV-13 every month and bailing the well to remove any DNAPL detected.

In addition, DNAPL was periodically observed in monitoring well 97-6A, screened from 12 to 22 feet below ground surface (bgs) in the upper portion of Aquifer A. Monitoring well 97-6A required replacement because it was obstructed, so replacement well MW04-6A was installed approximately five feet south of the existing well. No DNAPL has been observed in replacement well 04-6A since its installation in May 2004.

References:

- **Cleanup Action Plan, Former Treated Wood Products Area, International Paper Facility, Longview, Washington**; July 1997
- **Performance and Compliance Monitoring Plan, Former Treated Wood Products Area, International Paper Facility, Longview, Washington**; July 1997
- Letter from Howard Steele (Department of Ecology) to RueAnn Thomas (International Paper), November 7, 1997; request for work plan to investigate visually-impacted soils encountered during construction of subsurface barrier wall
- Letter from Rue Ann Thomas (International Paper) to Howard Steele (Department of Ecology), March 10, 1998; submittal of analytical data for soil samples collected during construction of subsurface barrier wall
- Final **Work Plan, Investigation of Areas of Soil Impact Outside the Containment Area**, March 27, 1998
- Final Report, **Investigation of Areas of Soil Impact Outside the Containment Area**; December 17, 1998
- Final Report, **Offsite Investigation Work Plan, International Paper, Longview, Washington**; December 21, 1998
- Letter from Rue Ann Thomas (International Paper) to Howard Steele (Department of Ecology), dated March 3, 1999; revised analytical results from offsite investigation
- Transmittal from Leslee Conner (Landau Associates) to Howard Steele (Department of Ecology), dated March 4, 1999; results of split soil and groundwater samples from offsite investigation
- **Additional Perimeter Boring Investigation Work Plan, International Paper, Longview, Washington**; July 16, 1999
- Transmittal from Randy Siegel (URS Greiner Woodward Clyde) to Howard Steele (Department of Ecology), dated September 14, 1999; regarding analytical results from additional perimeter investigation
- E-mail from Randy Siegel (URS Corporation) to Howard Steele (Department of Ecology), dated September 16, 1999; resulting of groundwater sampling from additional perimeter boring investigation

- Agency Final, *Cleanup Action Report, Groundwater Containment System, Former Treated Wood Products Area, International Paper Facility, Longview, Washington*, November 1999
- Draft *Additional Perimeter Boring Investigation Report and Maintenance Facility Work Plan, International Paper, Longview, Washington*; February 4, 2000
- Draft Report, *Soil and Groundwater Investigation of Eastern Area, International Paper, Longview, Washington*; February 7, 2000
- Draft Report, *Soil and Groundwater Investigation of Western Area, International Paper, Longview, Washington*; February 21, 2000
- Letter from RueAnn Thomas (International Paper) to Kaia Petersen (Department of Ecology); April 19, 2000; submittal of results from investigation near Port of Longview's maintenance facility in February 2000
- Draft *Offsite Investigation Report and Additional Action Feasibility Study, Port of Longview Maintenance Facility*, September 2000
- *Work Plan, Additional Action for Port of Longview Maintenance Facility Area*, February 2002
- Letter from Kaia Petersen (Department of Ecology) to Thomas B. Ross (International Paper); dated March 27, 2002; conditional approval of work plan for additional action in Port of Longview's maintenance facility area
- *As-Built Report/Operation and Maintenance Manual, Biosparging/Bioventing Area, Maintenance Facility Area, Former International Paper Facility, Longview, Washington*; March 2003
- *Annual Operation and Maintenance Report, Former International Paper Facility, Longview, Washington*; July 2003
- *Fifth Annual Groundwater Performance and Compliance Monitoring Plan Report, Former Treated Wood Products Area, International Paper Facility, Longview, Washington*; December 2003
- Letter to Thomas B. Ross, International Paper, from Kaia Petersen, Department of Ecology, dated March 16, 2004; regarding review of documents submitted by International Paper, agreement on groundwater monitoring parameters, approval of wells to monitor integrity of subsurface barrier wall, and frequency of monitoring for TWP area and MFA
- *2004 Annual Remedial Operations and Groundwater Monitoring Report, Former International Paper Facility, Longview, Washington*; December 2004

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"² as defined by the monitoring locations designated at the time of this determination)?

 X If yes, continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"²).

² "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the “existing area of groundwater contamination”), skip to #8 and enter “NO” status code, after providing an explanation.

_____ If unknown, skip to #8 and enter “IN” status code.

Rationale and Reference(s): Concentrations of constituents of concern (COCs) in groundwater in the MFA has generally remained below cleanup levels with the exception of groundwater monitoring/venting well AV-10 and monitoring well 97-6A and its replacement well 04-6A. Results from AV-10 indicated COCs exceeding cleanup levels for the majority of analytes. Samples collected from 04-6A contained concentrations of diesel-range hydrocarbons, benzo(a)anthracene, and chrysene that exceeded cleanup goals.

Although there are still detections of DNAPL in AV-10 and biosparging well BV-13, groundwater monitoring data from six monitoring wells screened in Aquifer A beneath the Upper silt (AV-09 through AV-13, and 99EA-3A) indicates detections of NAPL are localized within approximately 25 feet of a historical lineament. DNAPL has not been detected in replacement monitoring well 04-6A.

Reference: *2004 Annual Remedial Operations and Groundwater Monitoring Report, Former International Paper Facility, Longview, Washington*; December 2004

4. Does “contaminated” groundwater **discharge** into **surface water** bodies?

_____ If yes, continue after identifying potentially affected surface water bodies.

___X___ If no, skip to #7 (and enter a “YE” status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater “contamination” does not enter surface water bodies.

_____ If unknown, skip to #8 and enter “IN” status code.

Rationale and Reference(s): _____

5. Is the **discharge** of “contaminated” groundwater into surface water likely to be “**insignificant**” (i.e., the maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater “level,” and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes, skip to #7 (and enter “YE” status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are

³ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

increasing; and 2) provide a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no (the discharge of “contaminated” groundwater into surface water is potentially significant), continue after documenting: 1) the maximum known or reasonably suspected concentration of each contaminant discharged above its groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater “levels,” the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown, enter “IN” status code in #8.

Rationale and Reference(s): _____

6. Can the **discharge** of “contaminated” groundwater into surface water be shown to be “**currently acceptable**” (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented⁴)?

_____ If yes, continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site’s surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,⁵ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment “levels,” as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no (the discharge of “contaminated” groundwater can not be shown to be “**currently acceptable**”), skip to #8 and enter “NO” status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown, skip to #8 and enter “IN” status code.

Rationale and Reference(s): _____

7. Will groundwater monitoring/measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the “existing area of contaminated groundwater?”

 X If yes, continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the “existing area of groundwater contamination.”

_____ If no, enter “NO” status code in #8.

_____ If unknown, enter “IN” status code in #8.

Rationale and Reference(s): Treatment in the Maintenance Facility Area (MFA) will continue. Groundwater monitoring will continue on a regular schedule. Monitoring of site conditions and the MFA sparging system will continue on a monthly basis. DNAPL in bioventing well BV-13 and groundwater monitoring/venting well AV-10 will be gauged and, if detected, bailed on a monthly basis.

Reference: Letter to Thomas B. Ross, International Paper, from Kaia Petersen, Department of Ecology, dated March 16, 2004; regarding review of documents submitted by International Paper, agreement on groundwater monitoring parameters, approval of wells to monitor integrity of subsurface barrier wall, and frequency of monitoring for TWP area and MFA

8. Check the appropriate RCRAInfo status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

 X YE - Yes, “Migration of Contaminated Groundwater Under Control” has been verified. Based on a review of the information contained in this EI determination, it has been determined that the “Migration of Contaminated Groundwater” is “Under Control” for the Maintenance

Facility Area at the International Paper facility, EPA ID No. WAD 010745917, located at 10 International Way, Longview, Washington. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by Original signed by Kaia Petersen Date 7/6/2005
Kaia Petersen
Hydrogeologist

Supervisor Original signed by K Seiler Date 7/6/2005
K Seiler, Supervisor
Hazardous Waste and Toxics Reduction, Southwest Regional Office
Department of Ecology

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